

**REVISED BIOLOGICAL ASSESSMENT
FOR
COHO SALMON
AND
CHINOOK AND COHO SALMON ESSENTIAL FISH HABITAT
GRAZING AND NOXIOUS WEED CONTROL MEASURES
ELK CREEK PROJECT
JACKSON COUNTY, OREGON**

INTRODUCTION

Elk Creek project is located in Jackson County, Oregon 26.5 miles northeast of Medford, Oregon at river mile 1.7 above the confluence of Elk Creek with the Rogue River (Figure 1). Elk Creek flows north to south through the 3,502-acre U.S. Army Corps of Engineers' (Corps) project land over a distance of about 6 miles. The Elk Creek project was authorized as one of 3 multiple purpose projects designed to operate as a system to reduce flooding in the Rogue River Basin and to accomplish additional purposes such as irrigation, recreation, fish and wildlife enhancement, and water quality control. The other 2 dams are complete and operational; Lost Creek Dam was completed in 1977 and Applegate Dam in 1980.

Construction of Elk Creek project was initiated in 1971 with acquisition of project land by the Corps and relocation of residents, roads, and utilities. Of the project land area, approximately 3/4 are fee-acquired lands and 1/4 are withdrawn Bureau of Land Management (BLM) lands. Several legal actions ensued over a period of several years that resulted in an injunction against completion of the project, and halted construction at 1/3 the dam's design height. The last of these legal actions, by the United States Court of Appeals, Ninth Circuit Court in April 1995, required a comprehensive review of a wide range of issues under the National Environmental Policy Act (NEPA) before construction could continue.

In 1995 Congress was notified of the Corps' intention to evaluate options for long term management of the project in its uncompleted state. Phase 1 of the evaluation is to determine fish passage requirements and implement a fish passage system to reduce annual expenditures and improve biological conditions for anadromous fish, including the southern Oregon / northern California (SONC) coho salmon. Phase 2 is to provide a comprehensive review of all other issues required for long term management of the project land in the project's uncompleted state including potential disposition of sand and gravel stockpiles, potential restoration of areas disturbed by construction, land management purposes and uses, and long range planning for resource management which includes regulation of cattle grazing. An Interim Management Plan for the project was developed by the Corps in 2001 to aid in land management direction until the Phase 2 management plan is completed.

The only fish species listed under the Endangered Species Act (ESA) occurring in the Elk Creek basin is the SONC coho salmon, which was listed as Threatened on May 6, 1997

[Federal Register (62 CFR 24588)]. SONC coho salmon and Chinook salmon (*Oncorhynchus tshawytscha*) (mostly fall run fish) both have designated Essential Fish Habitat (EFH), established under the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act), throughout the entire Rogue River basin (Pacific Fisheries Management Council 1999).

Cattle grazing throughout the Elk Creek project land has probably occurred since the lands came into Federal ownership in 1971 and fences were either removed or neglected. Prior to Federal ownership, cattle grazing in the project area would have been dependent on land use practices of local landowners. Several local cattle operators currently have grazing leases that allow them to graze cattle on either the Lost Creek or Flat Creek allotments. These leases, issued by BLM, authorize cattle operators to graze cattle on adjacent BLM land and appear to apply to BLM-withdrawn lands that lie within the Corps' Elk Creek project. However, the leases do not apply to the fee-acquired lands within the Elk Creek project. Currently there are no fences of significance within the Elk Creek project land. As a result, cattle have strayed from BLM lands and have grazed on Elk Creek project land, without use of the Corps' enforcement authority to remove cattle.

Because of delays in implementation of Phase 1 fish passage measures, which in turn delayed evaluation of Phase 2 actions, the Corps developed interim management plans to guide actions until the Phase 2 plan is implemented. In addition, active management of the Elk Creek project land has gained more interest with the resource agencies and concerned citizens since the Federal listing of SONC coho salmon and designation of Critical Habitat for this fish.

After Phase 1 fish passage issues are resolved, Phase 2 will focus on long-term land management of the project in its uncompleted state. Scientific information gathered from interim management measures will aid in establishment of long-term management protocol. This long-term management will focus on a variety of issues including noxious weed control and maintenance of quality riparian habitat.

Weed control efforts conducted during the year 2002 included the following:

- Cattle were released on April 1 on lands included in BLM leases (the number of cattle allowed on the range was in accord with prior BLM-issued grazing leases).
- Cattle were removed from lowland areas before June 15. This removal was dependent on range conditions determined by the involved resource agencies. Cattle remained off lowland areas for the remainder of the grazing season (through October).
- Mechanical mowing of some patches of blackberry on the west side of Elk Creek during summer.
- Seeding using a seed drill on the west side of Elk Creek (approximately 90 acres) during fall. Species seeded included subterranean clover (*Trifolium subterraneum*), sheep fescue (*Festuca ovina*), and orchardgrass (*Dactylis glomerata*).
- Monitoring of yellow starthistle plant and seedhead densities and photo documentation during late summer.
- Employment of a range rider by cattle operators aided in cattle removal and in keeping them off of Elk Creek project land.

THE TIMBERED ROCK FIRE AND RE-INITIATION OF CONSULTATION

A wildfire known as the Timbered Rock Fire burned 24,512 acres of land from July 13 through September 14, 2002, including 607 acres on Elk Creek project land.

Investigations are currently being conducted by BLM to identify recommended restoration efforts on Corps' land. Fire restoration actions will likely be implemented by BLM through an agreement with the Corps. Fire impacted land on both the west and east sides of Elk Creek, and burn intensity varied greatly depending on location. Because of changes in range conditions resulting from the fire, BLM determined that grazing leases on the Flat Creek allotment (west of Elk Creek) would be suspended for at least 2 years and that grazing leases on the Lost Creek allotment (east of Elk Creek) would not change from previous years, except that cattle released on the Lost Creek allotment would not be allowed west of Elk Creek (cattle from the Lost Creek allotment are known to occasionally stray west of Elk Creek in small numbers).

A Biological Assessment was submitted to NOAA Fisheries on September 25, 2002 that addressed potential impacts of proposed grazing and noxious weed control measures on SONC coho salmon. Because grazing will not occur on Elk Creek project land west of Elk Creek for at least 2 years, this revised Biological Assessment is being submitted. This Biological Assessment includes grazing and noxious weed control measures but does not include grazing west of Elk Creek. This Biological Assessment may be amended when grazing is again allowed west of Elk Creek.

PROPOSED ACTION

The duration of this consultation will be for 2 years (2003 and 2004).

The proposed action differs from last years action mainly in that Flat Creek allotment (west of Elk Creek) cattle will not be turned out and Lost Creek allotment (east of Elk Creek) cattle will not be allowed to graze on the Flat Creek allotment, except perhaps in the fall to work seed into the ground. Grazing restrictions will be specified in a written agreement with cattle operators on the Lost Creek allotment.

The Corps plans to implement interim measures to reduce weed infestation while maintaining riparian habitat quality in lowlands adjacent to Elk Creek within the Corps' project land. Lowland meadow habitat lies adjacent to Elk Creek but is separated by riparian habitat and is disturbed as evident by the abundance of non-native noxious weeds, most notably yellow starthistle (*Centaurea solstitialis*) and Himalayan blackberry (*Rubus discolor*). This adaptive management program will be planned on a yearly basis, although some measures may be planned for longer periods given the knowledge that positive results can only be expected over time. A monitoring program has been established and implemented to quantify benefits of the program, and this information will be used to aid in future management efforts.

The Corps consulted with BLM to develop general plans for the year 2002. The Corps also obtained information from the Oregon State University Extension Service, Oregon Department of Fish and Wildlife (ODFW), and interested cattle operators in the development of the general plan. In accordance with this plan and by letter agreement with the Corps and ranchers, cattle were released on April 1 and per 15-day notice from the Corps to the cattle operators (U.S. Army Corps of Engineers 2002a), were removed by June 4 from lowland areas.

Because of changes in range conditions resulting from the Timbered Rock Fire, grazing will not occur on the west side of Elk Creek for at least 2 years and therefore, the September 25, 2002 Biological Assessment is not applicable.

Actions to occur and to be consulted on until grazing is allowed back on the west side of Elk Creek will include the following at least for years 2003 and 2004:

- Cattle release on Lost Creek allotment only, in accord with year 2002 (April 1).
- Cattle removal from the Lost Creek allotment in accord with year 2002 (per 15-day notice from the Corps to the cattle operators dependent on range conditions determined by BLM and the Corps).
- Limited use of cattle on the west side of Elk Creek during fall to work seed into the ground (not yet determined whether or not this will be implemented).
- Cattle will not be allowed west of Elk Creek according to letter agreements between the Corps and cattle operators.

Other efforts, which will have no effect on coho salmon, coho salmon critical habitat, and coho salmon and chinook salmon Essential Fish Habitat will/may include the following for years 2003 and 2004:

- Monitoring of seeded species during spring.
- Monitoring of yellow starthistle plant and seedhead densities and photo documentation during late summer.
- Possible mowing of seeded species to remove top-growth.
- Possible additional seeding during fall.

The plan for year 2002 necessitated a written agreement with 3 local cattle operators who have grazing leases on adjacent BLM lands to allow their presence on Corps' land. Written agreements were entered into with these 3 cattle operators (U.S. Army Corps of Engineers 2002b). The Corps' included conditions in this agreement in concord with management objectives for the year 2002. A new written agreement will be produced for year 2003 grazing.

Cattle stocking rates on the Lost Creek and Flat Creek grazing allotments are determined by BLM and only apply to BLM land, but cattle designated to graze BLM land on these allotments also use private land and timber company land, and will be authorized to use Corps land per this letter agreement. As non-BLM lands are not included in the calculations of stocking rates, the carrying capacity of the total land area that supports

cattle, including Corps' project land, is greater than the use, thus resulting in a low overall stocking rate and reduced threats of overgrazing.

The Lost Creek allotment lies east of Elk Creek and the Flat Creek allotment lies west. A total of 189 cows are allowed on the Lost Creek allotment. Of these, 56 are on the southern portion of the allotment (April 1 through September 30), 101 on the middle portion (April 1 through October 31 with 46 taken off the allotment on July 15), and 32 are on the northern portion (April 1 through October 15). Corps' Elk Creek project land lies at the southwestern end of the allotment.

Although the Flat Creek allotment will not be grazed for at least 2 years, with the exception of the possible use of cattle in the fall to work seed into the ground, the following information is provided: In typical years, a total of 124 cows are allowed on the Flat Creek allotment (April 1 through October 18 with 62 taken off the allotment on June 15). The majority of cows using Corps' project land are Flat Creek allotment cows and southern portion Lost Creek allotment cows, while cows from the northern portion of the Lost Creek allotment do not travel to Corps' project land. According to BLM, cows from the Lost Creek allotment only occasionally cross to the west side of Elk Creek.

Future management protocol will be analyzed and coordinated with appropriate resource agencies and appropriate documentation will be prepared to comply with the Endangered Species Act and other applicable environmental laws.

BIOLOGICAL ASSESSMENT FOR SONC COHO SALMON

General Population Trends in the Rogue River Basin: SONC Coho salmon are indigenous to the Rogue River Basin and are known to spawn and rear in the Elk Creek basin. It is thought that 3 distinct populations occur in the Rouge Basin: Upper Rogue River, Applegate River, and Illinois River. Analyses indicate that SONC coho salmon are generally reproductively isolated from other west coast coho salmon stocks, and gene flow is restricted between areas. This has been attributed in part to a relatively low incidence of straying among coho salmon in general (Weitkamp et al. 1995).

The upper Rogue and Applegate adult SONC coho salmon enter the river's mouth from the ocean, typically as 3-year old fish, around mid-September and those fish bound for the upriver tributaries peak at Gold Ray Dam around mid-November. Adult SONC coho salmon returns above Gold Ray Dam averaged approximately 4,000 fish during the 1940's and decreased to less than 200 fish from 1964 through 1976 (Oregon Department of Fish and Wildlife 1991). The sharp decline in adult returns was also observed in the North Umpqua suggesting that ocean survival and ocean harvest may be the primary factors for declining stock numbers. Hatchery fish dominated the returns in the upper Rogue above Gold Ray Dam from 1977 through 1986. This was evidenced from the Gold Ray Dam counts versus the adult fish returning to Cole Rivers Hatchery that suggested that nearly an equal number of SONC coho were observed at Cole Rivers and Gold Ray Dam. From 1992 to 1995, adult SONC coho salmon numbers ranging from 2,000 to 4,000 have been observed in excess of the Cole Rivers counts suggesting that SONC

coho salmon are spawning in the upper Rogue above Gold Ray Dam. The percentage of hatchery strays to wild fish is unknown in the Rogue system as a whole. Counts from the fish collection facility at Elk Creek Dam, also indicate increasing numbers of SONC coho salmon since 1992 when trap and haul transport of fish at the partially completed Elk Creek Dam was initiated (Satterhwaite et al. 1996). The trap and haul operation was initiated because of concerns of the ability of adult fish to pass upstream of the dam through the existing water diversion tunnel. The Corps currently funds ODFW to conduct the trap and haul program.

Trapped, naturally-spawned coho salmon released upstream of Elk Creek Dam have typically numbered over 500 individuals in recent years and numbered about 1,400 during the latest trap and haul season (Oregon Department of Fish and Wildlife 2002).

Natural History and Occurrence within the Project Area: Adult SONC coho salmon return to Elk Creek Dam from October through January with peak counts generally occurring in December each year and spawn primarily in tributaries to Elk Creek shortly after release upstream of the dam.

SONC coho salmon that spawn in the Elk Creek system are likely to be genetically similar to fish from the Cole Rivers hatchery, located at the base of nearby Lost Creek Dam. This hatchery was built in 1973 to mitigate for lost spawning habitat that would result from construction of Lost Creek, Applegate, and Elk Creek Dams. Hatchery mitigation for Elk Creek has never been provided. Hatchery strays have historically contributed to the run in Elk Creek but no longer do. Hatchery smolts were released in Elk Creek prior to the SONC coho salmon listing and since the listing, hatchery coho trapped at Elk Creek Dam as part of the trap and haul program are killed per requirement of NOAA Fisheries. Few, if any, wild SONC coho salmon were thought to spawn in Elk Creek prior to initiation of the trap and haul program in 1992, but numbers of naturally spawned fish have increased substantially since initiation of the program (U.S. Army Corps of Engineers 1999). Estimates of run composition at Elk Creek have varied between 17-28% hatchery fish in recent years when hatchery fish were 100% marked (Oregon Department of Fish and Wildlife 2001).

In-stream habitat present in Elk Creek through the project area is typified by large cobbles, small boulders, and bedrock, however pockets of suitable salmonid spawning habitat exist. Most of the material is too large for SONC coho salmon to build redds and spawn but spawning is known in isolated areas that support appropriately sized gravels. In general, spawning occurs in gravel-bottomed waterways. Gravel diameter averaging about 9 cm in diameter, and water velocity averaging 0.6 m/s at water depths averaging about 16 cm have been reported (Briggs 1953). Redd size average about 3.4 square yards (U.S. Army Corps of Engineers 1991).

Spawning by SONC coho salmon occurs in Elk Creek but is more prevalent in the tributaries, including West Branch Elk Creek, which enters Elk Creek within the bounds of the project area and Flat Creek, which enters Elk Creek at the upstream (north) end of the project. The approximate upstream limits of SONC coho salmon spawning occurs at

river mile 13.1 on Elk Creek, 2.5 on West Branch Elk Creek, and 2.3 on Flat Creek (Oregon Department of Fish and Wildlife 2001). Spawning is also prevalent in tributaries entering Elk Creek upstream of the project area, including Bitterlick, Sugar Pine, and Hawk Creeks. Spawning in the mainstem Elk Creek would be more prevalent during dry years if preferred spawning tributaries are inaccessible.

Minor drainages enter Elk Creek from the east on Corps' project land but no salmonid spawning is known from these drainages.

Spawning surveys conducted by BLM in December, 2002 yielded 5 SONC coho salmon and 3 redds on Corps' project land in West Branch Elk Creek. These redds were all located within ¼ mile downstream of the Elk Creek Road culvert. One redd was located in Elk Creek near the mouth of West Branch Elk Creek and several more redds and 3 SONC coho salmon about 1 mile upstream of the dam Bureau of Land Management 2003.

Juvenile habitat use varies with location. In general, after emergence from the redd, fry congregate in quiet backwaters, side channels, and small creeks, especially in shady areas with overhanging branches (Gribanov 1948). As fry become older, they occupy areas along open shorelines and progressively move into areas of higher velocity in midstream and on the stream margins (Lister and Genoe 1970). Juveniles may move upstream or downstream to rear (Neave 1949). More structurally complex streams that contain stones, logs, and bushes in the water generally support larger numbers of fry (Scrivener and Andersen 1982).

Juvenile SONC coho salmon emergence from redds can occur during the time when cattle would normally be present in lowland meadows adjacent to Elk Creek. Juvenile SONC coho salmon in the Elk Creek basin typically emerge from the gravel as fry in March and April (Oregon Department of Fish and Wildlife 2002). At the time of cattle turnout on project land on April 1, juvenile coho salmon are either out of the redd as fry or still in the redd as sac fry (Oregon Department of Fish and Wildlife 2002). Sac fry are capable of limited movement within the redd and are less susceptible to mechanical disturbance, such as from cattle presence in the water, than are salmon still in the egg stage.

As it is known that coho salmon juveniles can move downstream to rear (Sandercock 1991) it is possible that juvenile fish spawned in tributaries to Elk Creek within the project area or upstream of the project area would be present in Elk Creek within the bounds of the project area during spring and fall when cattle would normally be using lowland meadow areas adjacent to Elk Creek. However, juveniles rear primarily in tributaries of Elk Creek during the summer because of relatively high water temperatures in lower Elk Creek. Rearing in Elk Creek is more prevalent during the winter months when water temperatures in Elk Creek are more favorable (Oregon Department of Fish and Wildlife 2002). The Corps' letter agreement with cattle ranchers will prohibit grazing on the west side of Elk Creek for at least the next 2 years, except perhaps to work seed into the ground in meadow areas in the fall. This decision resulted from BLM's assessment of range conditions.

Juvenile SONC coho salmon migrate to the ocean as yearlings and typically spend 2 years in the ocean before returning as adults (age 3 fish). Migration timing of smolts increases during April and May, peaks in early June and decreases through mid-July.

Designated Critical Habitat: Critical habitat is designated to include all river reaches accessible to listed salmonids within the range of an Evolutionarily Significant Unit (ESU), except for reaches on Native American lands.

There are dams within the range of the SONC coho salmon that currently block access to historical spawning and rearing areas. Areas above these dams are not considered Critical Habitat by NOAA Fisheries because areas below the dams provide adequate spawning habitat to maintain the runs; Elk Creek Dam is not included and areas upstream of Elk Creek Dam are considered Critical Habitat.

In designating Critical Habitat, NOAA Fisheries considers the following requirements of the species: Space for individual and population growth, and for normal behavior; food, water, air, light, minerals, or other nutritional or physiological requirements; cover or shelter; sites for breeding reproduction, or rearing of offspring; and habitats that are protected from disturbance or are representative of the historic geographical and ecological distributions of this species. In addition to these factors, NOAA Fisheries also focuses on the known physical and biological features that are essential to the conservation of the species and may require special management considerations or protection. These essential features include spawning sites, food resources, water quality and quantity, and riparian vegetation {50 CFR 424.12(b)}.

Literature Review (Grazing Impacts to Salmon and Habitat): The literature is replete with studies that document impacts of grazing to riparian systems and fish populations (for a summary see Platts 1991). In parts of the arid western United States where stocking rates are high and water is scarce, damage to riparian systems and fish populations is common. Damage may include reduction of vegetation and shade, flattening out of stream banks, increases in turbidity, increases in water temperature and nutrients, and damage to redds.

Platts (1981) however found that conditions may have improved with grazing on a well-managed permitted grazing area on which pastures were rested periodically and animals were herded to protect the riparian areas. Platts (1981) points to 7 major options, used alone or in combination, that should be considered as methods are developed to build fishery compatibility into grazing strategies. These include the following:

- Rest from grazing
- Control of livestock numbers
- Control of livestock distribution
- Control of timing of forage use
- Control of kind and class of livestock
- Control of forage use

- Artificial rehabilitation of stream riparian ecosystems

Agency Field Meetings and Prior Effect Determinations: In light of the common knowledge that cattle can impact riparian systems in the western United States and because of concerns expressed from interested citizens, a number of interagency field meetings have occurred at the Elk Creek project site to periodically check the area for any impacts of grazing to riparian habitat and the creek itself.

It was agreed in a July 31, 1996 meeting by resource agency personnel representing the Corps, BLM, the U.S. Forest Service, ODFW, and others that livestock had not impacted riparian areas along Elk Creek. This was agreed upon by all in attendance (Bureau of Land Management 1996). The Corps found that riparian habitat damage from cattle grazing was considered negligible during an on-site visit on October 20-21, 1999 (U.S. Army Corps of Engineers 2000). During an on-site meeting on November 16, 2000, it was agreed by Corps and NOAA Fisheries personnel that a minor level of cattle grazing in the riparian area had occurred (U.S. Army Corps of Engineers 2001).

Per letter from the Corps to NOAA Fisheries dated February 1, 2001, the Corps made a determination that cattle grazing during 2001 would Not Likely Adversely Affect SONC coho salmon. This determination was based largely on the results of prior field meetings (detailed below) on-site and the fact that Elk Creek generally has rocky bottoms and sides, which minimize turbidity when cattle enter the creek (turbidity can adversely effect juvenile rearing habitat and survival of eggs). Because of rangeland improvements scheduled for 2002, the Not Likely to Adversely Affect determination made for grazing in 2001 was downgraded to a No Effect determination for grazing in 2002 and was incorporated into the Environmental Assessment for this project (U.S. Army Corps of Engineers 2002c). A No Effect determination does not require consultation with NOAA Fisheries.

On June 11, 2002, the Corps met with NOAA Fisheries and BLM at the Elk Creek project. The purpose of this field investigation was to examine the condition of the riparian habitat along Elk Creek and the creek itself. During this meeting, it was agreed that minor evidence of cattle grazing in the riparian area and stream use was observed (U.S. Army Corps of Engineers 2002d). Because of this evidence and upon recommendation from NOAA Fisheries, the Corps decided to prepare a Biological Assessment for potential impacts of cattle grazing to SONC coho salmon and enter into consultation with NOAA Fisheries. The Biological Assessment submitted to NMFS dated September 25, 2002, assumed that grazing would continue as in the past. The present Biological Assessment takes into account that grazing leases have been suspended on the Flat Creek allotment for at least 2 years.

Endangered Species Act Conclusions

The proposed action **May Affect but will not Likely Adversely Affect** the following:

- SONC coho salmon
- SONC coho salmon Critical Habitat

These determinations were made in consultation with the NOAA Fisheries guide for making ESA determinations (National Marine Fisheries Service 1996): There is a negligible (extremely low) probability of take of SONC coho salmon or destruction / adverse modification of SONC coho salmon critical habitat (low probability of take or modification could include death or injury of an individual fish, alteration of vegetation, or disturbance of spawning beds, for example).

The determinations are based on the following:

- Cattle use of areas west of Elk Creek by Lost Creek allotment cattle is typically low and cattle from the Lost Creek allotment will not be allowed west of Elk Creek during the time of suspension of grazing on the Flat Creek allotment (except for possible use of cattle in the fall to work seed into the ground);
- Minor evidence of cattle grazing in the riparian area and stream use were observed on June 11, 2002 and prior field meetings have yielded similar conclusions so it is not expected that damage to riparian or in-stream habitat for coho salmon would be more than negligible;
- Elk Creek generally has rocky bottoms and sides which minimize turbidity when cattle enter the creek;
- In-stream habitat adjacent to lowland meadows does not provide much suitable spawning habitat for SONC coho salmon and most spawning occurs in tributaries (Elk Creek through the project area is primarily used as an adult migration corridor and for juvenile rearing);
- Coho salmon are typically out of the gravel or in the gravel as sac fry during cattle presence on project land;
- Range management protocol and monitoring that ensures maintenance of the riparian habitat is now being employed including low stocking rates, control of livestock distribution, and control of timing of forage use.

Key features of this restoration plan include the following: A written agreement that limits the duration of grazing and provides for the removal of cattle at the District Commander's discretion; a prohibition of cattle grazing on the west side of Elk Creek for at least 2 years to allow recovery from the fire with the exception of the possible use of cattle in the fall to work seed into the ground; employment of methods to reduce weed infestation including seeding and mowing as needed; and monitoring to document habitat changes.

The Corps will coordinate any additions or changes to range management plans with NOAA Fisheries as required by the ESA.

ESSENTIAL FISH HABITAT

Parameters: The Sustainable Fisheries Act of 1996 amended the Magnuson-Stevens Act establishing requirements for Essential Fish Habitat (EFH). SONC coho salmon and Chinook salmon have designated EFH throughout the entire Rouge River basin (Pacific Fisheries Management Council 1999).

Freshwater EFH for both coho salmon and Chinook salmon consist of 4 major components: (1) spawning and incubation; (2) juvenile rearing; (3) juvenile migration corridors; (4) adult migration corridors and adult holding habitat. Important features of EFH for spawning, rearing, and migration include adequate (1) substrate composition; (2) water quality (dissolved oxygen, nutrients, temperature, etc.); (3) water quantity, depth, and velocity; (4) channel gradient and stability; (5) food; (6) cover and habitat complexity (large woody debris, pools, channel complexity, aquatic vegetation, etc.); (7) space; (8) access and passage; and (9) flood plain and habitat connectivity. The geographic extent of coho salmon and Chinook salmon EFH includes all waters currently and historically used by these species.

Chinook Salmon Occurrence and Habitat Use within the Project Area: Chinook salmon, mostly fall run fish, occur in the Elk Creek basin but in much lower numbers than SONC coho salmon. Trapped, naturally-spawned Chinook salmon released upstream of Elk Creek Dam have typically numbered fewer than 50 individuals in recent years and numbered probably about 20 during the latest trap and haul season (Oregon Department of Fish and Wildlife 2002).

Chinook salmon use a wider variety of habitats than many other species of salmon. Spawning of Chinook salmon in the mainstem of Elk Creek would be more likely than spawning of SONC coho salmon, but would also be limited within the project area by substrate composition.

Juvenile Chinook salmon emergence from redds can occur during the time when cattle would be present in lowland meadows adjacent to Elk Creek. Juvenile Chinook salmon in the Elk Creek basin typically emerge from the gravel as fry from late February to early April (Oregon Department of Fish and Wildlife 2002). At the time of cattle turnout on project land on April 1, juvenile Chinook salmon are either out of the redd as fry or still in the redd as sac fry (Oregon Department of Fish and Wildlife 2002). Sac fry are capable of limited movement within the redd and are less susceptible to mechanical disturbance, such as from cattle presence in the water, than are salmon still in the egg stage.

Juveniles rear primarily in tributaries of Elk Creek during the summer because of relatively high water temperatures in lower Elk Creek. Rearing in Elk Creek is more prevalent during the winter months when water temperatures in Elk Creek are more favorable (Oregon Department of Fish and Wildlife 2002).

Essential Fish Habitat Conclusions

The proposed action **May Affect but will not Likely Adversely Affect** the following:

- SONC coho salmon Essential Fish Habitat
- Chinook salmon Essential Fish Habitat

There is a negligible (extremely low) probability of destruction / adverse modification of SONC coho salmon habitat and Chinook salmon habitat (low probability of take or

modification could include alteration of vegetation or disturbance of spawning beds, for example).

The determinations are based on the following:

- Minor evidence of cattle grazing in the riparian area and stream use were observed on June 11, 2002 and prior field meetings have yielded similar conclusions so it is not expected that damage to riparian or in-stream habitat for coho salmon and Chinook salmon would be more than negligible;
- Elk Creek generally has rocky bottoms and sides which minimize turbidity when cattle enter the creek;
- In-stream habitat adjacent to lowland meadows does not provide much suitable spawning habitat for SONC coho salmon or Chinook salmon and most spawning occurs in tributaries (Elk Creek through the project area is primarily used as an adult migration corridor and for juvenile rearing, although spawning has been noted);
- Range management protocol and monitoring that ensures maintenance of the riparian habitat is now being employed including low stocking rates, control of livestock distribution, and control of timing of forage use;
- Cattle use of areas west of Elk Creek by Lost Creek allotment cattle is typically low and Corps grazing agreements will contain provisions that cattle from the Lost Creek allotment will be prohibited west of Elk Creek during the time of suspension of grazing on the Flat Creek allotment (except for the possible use of cattle in the fall to work seed into the ground).

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